

REMARKS

The above-identified application has been carefully reviewed in light of the Examiner's communication mailed July 18, 2003.

Claim 1 has been amended to more clearly set forth and define the present invention. New claims 56, 57 and 58 are directed to embodiments for which patent protection is sought. These amendments and the new claims are fully supported by the present specification.

Claims 1, 4 to 8, 10 to 17, 21 to 30, 32 to 36, and 40 to 55 have been rejected under 35 USC 102(a) as being anticipated by Martin. Applicant traverses this rejection as it pertains to the present claims.

The present claims are directed to additive compositions, additive assemblies and methods for producing additive compositions.

In independent claim 1, a fuel additive composition is provided which comprises a sustained release component, and an additive component which is effective to provide at least one benefit to a fuel when released into the fuel. The sustained release component is (1) substantially insoluble in the fuel, and (2) effective to reduce the rate of release of the additive component into the fuel relative to an identical composition without the sustained release component. In addition, the sustained release component comprises at least one polymeric material including polymer repeating units from an unsubstituted aliphatic olefin monomer having 2 to 12 carbon atoms per molecule.

Claims dependent upon claim 1 provide that the sustained release component is present as a matrix in which the additive component is located (claim 5) or that the sustained release component coats the additive component (claim 6). Advantageously, the at least one polymeric material includes polymer repeating

units from at least one of ethylene and propylene (claim 56), more preferably ethylene (claim 57).

In independent claim 8, a fuel additive composition is provided which comprises a matrix material and an additive component. The additive component is located in the matrix material and is effective, when released into a fuel, to provide at least one benefit to the fuel. The matrix component comprises at least one polymeric material and is (1) substantially insoluble in the fuel and (2) effective to reduce the rate of release of the additive component into the fuel relative to an identical composition without the matrix material. In one embodiment, the polymeric material includes polymer repeating units derived from an olefin component having 2 to about 12 carbon atoms per molecule (claim 13).

Independent claim 30 is directed to a fuel additive assembly comprising a housing including a fuel inlet and a fuel outlet; and an additive composition disposed within the housing and including a fuel additive component and a matrix material comprising at least one polymeric material. The additive component is located in the matrix material and is effective, when released into a fuel, to provide at least one benefit to the fuel. The matrix material is further defined as being (1) substantially insoluble in the fuel in contact with the additive composition and (2) effective to reduce the rate of release of the additive component into the fuel relative to an identical additive composition without the matrix material. In one embodiment, the matrix material comprises at least one polymeric material including repeating units derived from an olefin component having 2 to about 12 carbon atoms per molecule (claim 33).

Methods of producing a fuel additive composition are provided in independent claim 44. The methods of claim 44 comprise the steps of combining an additive component with a matrix material to

form a mixture. The additive component is effective to provide at least one benefit to a fuel when released into the fuel. The matrix material comprises at least one polymeric material and is substantially insoluble in the fuel. The methods further comprise forming one or more discrete units of the mixture. The discrete unit or units of the mixture provide a reduced rate of release of the additive component into a fuel relative to an identical unit or units without the matrix material. In one embodiment, the polymeric materials includes polymer repeating units derived from an olefin component having 2 to about 12 carbon atoms per molecule (claim 58).

In independent claim 48, an additive composition is provided and comprises a matrix material and an additive component located in the matrix material and effective, when released into a fuel, to provide at least one benefit to the fuel. The matrix material comprises an aliphatic acid component and is substantially insoluble in the fuel and is effective to reduce the rate of release of the additive component into the fuel relative to an identical composition without the matrix material. In one embodiment, the aliphatic acid component includes aliphatic acid molecules having about 18 to about 36 carbon atoms (claim 49).

Independent claim 52 is directed to an additive assembly comprising a housing having a fuel inlet and fuel outlet; and an additive composition disposed within the housing and including an additive component and a matrix material comprising an aliphatic acid component. The additive component is located in the matrix material and is effective, when released into a fuel, to provide at least one benefit to the fuel. The matrix material is substantially insoluble in the fuel in contact with the additive composition and is effective to reduce the rate of release of the additive component into the fuel relative to an identical additive composition without the matrix material. In one embodiment, the

aliphatic acid component includes aliphatic acid molecules having about 18 to about 36 carbon atoms (claim 53), more preferably having about 28 to about 36 carbon atoms (claim 54).

Providing a fuel additive composition including a substantially fuel-insoluble sustained release component or matrix material, as recited in the present claims, is advantageous in that there is substantially no need to burn or otherwise remove the sustained release component or matrix material from the fuel. Such a need would exist if the sustained release component or matrix material was soluble and dissolved in the fuel. Using the present substantially fuel-insoluble sustained release components and matrix materials reduces or substantially avoids this additional burden, while providing effective sustained release or slow release of the fuel additive without substantially interfering with the performance of the fuel or of the engine using the fuel.

Martin discloses a fuel filter including a fuel additive that is slowly released into the fuel. Martin discloses, in column 5, line 43 to column 6, line 6, that tablets of fuel additive may include an outer hydrocarbon insoluble coating selected to be substantially insoluble in hydrocarbon fuel mixtures. Martin discloses that typical and preferred coating materials are commercially available polymers and block copolymers including polyethylene glycol or polyvinyl acetate. Martin further discloses that in other embodiments the fuel additive may be embedded within a solid matrix which can be either hydrocarbon soluble or hydrocarbon insoluble.

Martin does not specifically disclose, teach or suggest the present invention, for example, Martin does not specifically disclose, teach or suggest a fuel additive composition including a sustained released component comprising at least one polymeric material including polymer repeating units from an unsubstituted, aliphatic olefin monomer having 2 to about 12 carbon atoms per

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molecule, as recited in independent claim 1. The only specific coating materials disclosed in Martin are polyethylene glycol and polyvinyl acetate. Neither of these materials includes polymer repeating units from an unsubstituted, aliphatic olefin monomer having 2 to about 12 carbon atoms per molecule.

In view of the above, applicant submits that claims 1, 4 to 7, 56 and 57 are not anticipated by and are unobvious from and patentable over Martin under 35 U.S.C. 102(a) and 103(a).

In addition, Martin does not specifically disclose, teach or suggest an additive composition comprising an additive component located within a matrix material in which the matrix material comprises at least one polymeric material, for example as recited in independent claim 8 and independent claim 30. To the contrary, Martin discloses solid matrixes but does not disclose any specific material or materials useful as such matrix material. In particular, Martin does not specifically disclose, teach or suggest that the matrix material comprises at least one polymeric material, as recited in independent claims 8 and 30.

In view of the above, applicant submits that claims 8, 10 to 17, 21 to 30, 32 to 36 and 40 to 47 are not anticipated by and are unobvious from and patentable over Martin under 35 U.S.C. 102(a) and 103(a).

Further, Martin does not specifically disclose, teach or even suggest an additive composition comprising a matrix material and an additive component effective when released into a fuel to provide at least one benefit to the fuel, with a material comprising an aliphatic acid component, as recited in independent claims 48 and 52. As noted previously, Martin does not specifically disclose, teach, or suggest any specific material or materials useful as a matrix material in a fuel additive composition, let alone a matrix material comprising an aliphatic acid component, as recited in independent claims 48 and 52.

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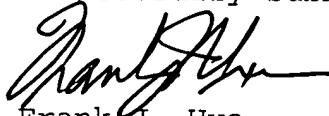
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In view of the above, applicant submits that claims 48 to 55 and 58 are not anticipated by and are unobvious from and patentable over Martin under 35 U.S.C. 102(a) and 103(a).

Each of the dependent claims is separately patentable over the prior art. For example, none of the prior art, taken singly or in any combination, disclose, teach or even suggest the present additive compositions, additive assemblies and methods of producing additive compositions including the additional feature or features recited in any of the present dependent claims. Therefore, applicant submits that each of the present claims is separately patentable over the prior art.

In conclusion, applicant has shown that the present claims are not anticipated by and are unobvious from and patentable over the prior art under 35 U.S.C. 102 and 103. Therefore, applicant submits that claims 1, 4 to 8, 10 to 17, 21 to 30, 32 to 36 and 40 to 58 are patentable over the prior art, and respectively requests that the Examiner pass the above-identified application to issuance at an early date. Should any matters remain unresolved, the Examiner is requested to call (collect) applicant's attorney at the telephone number given below.

Respectfully submitted,



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